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Abstract

To encourage health insurance uptake, marketers and policymakers have focused on consumers' economic self-interest, attempting to show that insurance is a good deal or to sweeten the deal, with subsidies or penalties. Still, some consumers see insurance as a bad deal, either because they rationally exploit private risk information ("adverse selection"), or irrationally misperceive the value due to cognitive biases (e.g., optimism). As a result, about 30 million Americans remain uninsured, including many who could afford it.

At the same time, polling suggests that Americans view health insurance through a moral lens, seeking to protect those with pre-existing conditions especially. In other markets, "green halo" and "noble edge" frames have been shown effective. As part of a broader research agenda on private law solutions to healthcare policy, we test whether moral framing could support insurance uptake. We report four phases of research.

First, to understand current health insurance marketing in America, we collected the universe of advertisements from the state and Federal exchanges and coded a 10% sample for themes of economic self-interest versus three moral themes: helping others, helping community, or responsibility. In the 199 ads in which any theme appeared, 191 ads (96%, CI: 92-98%) centered on economic self-interest.

Second, we enrolled 344 uninsured Americans in an online, vignette experiment where we offered various insurance plans. Over a baseline where 43.6% were willing to purchase insurance, we found that framing an economically-identical plan around generosity yielded an 11.8% higher uptake.

Third, we conducted five focus groups with 32 adults, including two groups in Spanish. We explored variations in the frames and probed for resistance, to prepare for the next phase of research.

Fourth, using an online advertising platform (Google), we purchased 5.6 million advertising impressions in English and Spanish, targeting higher-income Americans nationwide during the 2021 open-enrollment period. Consumers saw advertisements from a control group (highlighting economic self-interest, with real ads collected from the field) versus three experimental groups (helping others, helping community, or responsibility). We measured whether consumers clicked to "shop now" on the healthcare.gov website (1.01% click-through rate (CTR) in English and 1.38% CTR in Spanish at baseline). "Helping community" ads increased CTR over the control by 14.5% in English and by 33.7% in Spanish. Ads emphasizing "responsibility" increased CTR by 30.3% in English, though reduced CTR by 14.7% in Spanish. "Helping others" ads increased CTR by 9.8% in English but decreased CTR by 13.9% in Spanish. All of these results were significant at the .01 level and were robust to demographic controls and subgroup analyses, using individual and county-level covariates.

Although the optimal approach varies, the status quo self-oriented message of economic rationality was *not* the top-performing approach for either language group. Scaled up to real-world advertising budgets, back-of-the-envelope extrapolation suggests that under moral framing, millions of additional Americans could be driven to shop for health insurance.

I.   Introduction

Notwithstanding the Affordable Care Act's (ACA) coverage expansion, which included substantial subsidies and a structured market for individuals and families to shop for insurance, millions of Americans remain uninsured (Patient Protection and Affordable Care Act, 2010; Rae et al., 2021). Health insurance enrollment is correlated with greater access to primary care and medications, greater preventive services utilization, and improved self-reported health (Kominski et al., 2017). On the other hand, high rates of uninsurance impinge access to care, mortality, and health outcomes (McWilliams, 2009; Wilper et al., 2011). Uninsurance contributes to financial instability and health inequity (World Health Organization, n.d.). Across the country, Black, Hispanic, and Native populations all continue to have higher rates of uninsurance than White Americans (Kaiser Family Foundation, 2019). Younger populations are also less likely to be insured (Conway, 2021).

Insurance coverage advances the well-being of society by making people healthier and stabilizing the insurance market (Karpman et al., 2018, p. 604). But high rates of coverage are also essential at the system level. Under the ACA rule requiring insurers to use community rating (charging the same premiums, or narrow bands of premiums, regardless of health status or certain demographics), greater enrollment of younger and healthier patients, especially if higher-income and not eligible for subsidies, drives down premiums for everyone else, which then facilitates further insurance coverage (Levitt et al., 2013). According to estimates by the U.S. Department of Health & Human Services, about 3.6 million high-income U.S. residents lack health insurance coverage. (American Community Survey, 2019).

While some political figures have progressive plans for universal coverage, institutional factors will challenge their adoption (H.R.1384, 2019; H.R.2452, 2019). Congress nullified the ACA's coverage mandate (H.Rept.115-446, 2017, p. 324). Only six states have adopted a version of a state-level individual mandate.[1]

To promote insurance coverage, at both state and federal levels, we need a range of evidence-based mechanisms to better understand what drives insurance purchasing transactions. Increased subsidies, with the effect of reduced policy cost, have been shown to improve insurance uptake. And yet even some people for whom insurance would be free or close to free still choose not to enroll. Most states that expanded Medicaid saw their rates of uninsurance go down dramatically, but some states that expanded Medicaid still have amongst the highest uninsured rates in the country.

In this paper, we explore a "private law" approach to encourage health insurance uptake, by reframing the purchase decision. Decision frames, classically defined as "the decision maker's conception of the acts, outcomes, and contingencies associated with a particular choice," have been shown to change the desirability of options (Tversky & Kahneman, 1981). While typical framing of the decision to purchase health insurance emphasizes the low costs and high benefits to a family getting insurance coverage, there has been insufficient research exploring how behavioral factors can encourage insurance uptake. This is the first empirical project of which we are aware that explores whether framing around generosity, community, or responsibility could enhance insurance uptake. Wendy Epstein (2020), a principal investigator, has laid out an extensive argument for this approach,

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[1] California, Massachusetts, New Jersey, Rhode Island, Vermont, and the District of Columbia have individual mandates.

including citation to the relevant literatures. But whether it will actually work is the empirical question explored here.

The paper proceeds as follows. We review the literature on health insurance purchasing behavior and on behaviorally-informed approaches to marketing (Part II). We then report on a project to understand status quo advertising practices (Part III), an online pilot experiment (Part IV), and qualitative work with focus groups (Part V). Ultimately, in Part VI, we report on a field experiment using real-world consumer behaviors responding to different framing approaches to prompt them to actually shop for health insurance. Part VII offers concluding comments and directions for future research.

II.   Literature Review

A.   Health Insurance Purchasing Behavior

From a rational consumer's utility-maximizing perspective, the decision to purchase insurance is one of costs versus benefits. This approach weighs the insurance premium price (net of subsidies) against the expected utility the individual consumer will get from such coverage. Accordingly, research on the decision to purchase health insurance has predominantly been based on traditional economics frameworks focused on concerns about cost and complexity,[2] which the ACA targeted through penalties, subsidies, and standardized policies on the Exchanges, with guaranteed benefits (O'Donoghue & Somerville, 2018; Graves & Long, 2006; Desmond et al., 2016; Baicker et al., 2012).

Consistent with the traditional approach, studies have shown that cost, or more particularly affordability relative to wealth, is the paramount issue for many consumers of health insurance. Lower income families are more likely to be uninsured (Tolbert, et al., 2020). And a 2019 study by the Kaiser Family Foundation (KFF) found that 73.7% of respondents listed "coverage not affordable" as a reason for being uninsured (Tolbert, et al., 2020).

The decision to purchase health insurance predominantly caters to questions of cost, affordability, and economic rationality. For instance, common advertisements marketing the purchase of health insurance on healthcare.gov include:
- "Pay less for health plans due to the new Covid relief law."
- "You can pay less for health coverage."
- "For less than $14 a month, I'm covered—doctors visits, meds, vision & dental."
- "Keep kids healthy throughout the school year with **free** or **low cost** health insurance."

However, even in states that expanded Medicaid to cover more of the poor, the average rate of uninsurance is still over 8% (Cross-Call & Broaddus, 2020). In other words, many of the remaining uninsured are not the poorest Americans. Over 17% of the uninsured population make over 400% of the Federal Poverty Level (FPL) and 37.7% of uninsured make between 200 and 399% of the FPL (Cross-Call & Broaddus, 2020). In the same KFF survey 21.3% of respondents gave "do not need or want [health insurance]" as a reason for being uninsured (Cross-Call & Broaddus, 2020). Likewise, other evidence suggests that in fact, people turn down policies even when they are affordable[3] and even when the expected utility model of choice under risk suggests that individuals should purchase policies(Bundorf &

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[2] Explaining the relevance of risk aversion for understanding economics, including discussion of insurance policies
[3] Finding policies are affordable for between 25 and 75 percent of the uninsured

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Pauly, 2006; Levy & DeLeire, 2008; DeNavas-Walt et al., 2011; Johnson et al., 2013).[4] Many people with access to subsidies that cover almost the entire price of the policy still do not sign up for a plan (Fehr et al., 2019).

A recent study found that one-fifth of uninsured adults reported not needing or not wanting coverage (Cha & Cohen, 2020). Younger consumers were less likely to cite affordability concerns as their reason for declining, which suggests that they perceive little value from being insured (Cha & Cohen, 2020). Indeed, some of these Americans feel that insurance is unnecessary because of the low probability of becoming sick and low expected medical costs. Some of these individuals calculate accurately. The law requires community rating (i.e., redistribution of cost across health statuses), and there are also substantial administrative costs, both of which reduce the actuarial value of insurance for healthy individuals who may feel indifferent between being uninsured and buying an actuarially-unfair plan (American Academy of Actuaries, 2017). Others make this value assessment inaccurately due to known biases (Baicker et al., 2012; Rice, 2013). These "invincibles" were a primary target of the ACA's individual mandate, which is no longer in effect in part due to its unpopularity (American Action Forum, 2013).

B. Behavioral Approaches to Marketing

An approach to marketing health insurance based on economic rationality assumes that people have stable preferences and those preferences are grounded in costs and benefits. But this framing may not be effective for a significant portion of the population. The potential for message framing to change public opinion, attitudes, and behaviors is well-established (Iyengar & Kinder, 1987; Price & Tewksbury, 1997; Chong & Druckman, 2007). A growing body of research shows that results can differ when identical decision choices are simply framed differently (Tversky & Kahneman, 1981).

For instance, messaging campaigns can be used proactively to encourage insurance uptake (Domurat et al., 2019; Clarke et al., 2017). In Oregon, for example, a suite of outreach activities (mail, e-mail, and phone reminders) led to a 10 percent increase in Medicaid enrollment (Wright et al., 2017). In California, letters sent to eligible applicants of Covered California (that state's marketplace) led to a 16 percent increase over a base enrollment rate of 13 percent (Goldin et al., 2021). A letter experiment with 750,000 people across 37 states encouraging ACA enrollment found similar effects in states that did and did not expand Medicaid (Yokum et al, 2022).

 Messaging interventions are a potentially efficient approach. In some cases, improved messaging is free on the margin—if an agency is going to do outreach anyway, they might as well do it optimally. If you can get the postcard text right, or send an additional postcard for $1, that may be better than sending a $500 subsidy (DellaVigna & Linos, 2020; Benartzi et al., 2017; Mertens et al., 2022).[5]

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[4] Finding that consumers chose the objectively better plan only half the time

[5] Meta-analysis finding that "the average impact of a nudge is very large – an 8.7 percentage point take-up effect, a 33.5% increase over the average control"; Finding "impact of nudges is often greater, on a cost-adjusted basis, than that of traditional tools" and specifically reporting on an email campaign that generated an impact "more than 100 times larger than the impact per dollar spent by the government on tax incentives"; Nudges have small to medium effects).

The foregoing literature suggests that not all consumers respond positively to the message that purchasing health insurance is a rational economic choice.[6] Some of these individuals, particularly those who are young and healthy, predict low health care expenses relative to the cost of purchasing a policy.

But health insurance is not just a consumer product; it also reflects a social or political commitment. Protections for people with pre-existing conditions (including guaranteed issue and community rating) are very popular. A recent survey found that 89% of people, across political parties, thought that continuing the ACA's pre-existing condition protections was important (Kirzinger et al., 2019; Kaiser Family Foundation, 2018). Similarly, about two-thirds (64 percent) say it is "very important" that community rating remains law, while an additional one in five (22 percent) say it is "somewhat important." (Kirzinger et al., 2019; Kaiser Family Foundation, 2018). Even when explicitly told that these protections may have led to increased costs for healthy people, a majority still says it is "very important" to them that these protections continue (Kirzinger et al., 2019; Kaiser Family Foundation, 2018). These protections are possible with the community rating rule banning adjustment to premium rates by health status because healthy people subsidize the cost of sicker people.

One possibility for health insurance, then, is to sell policies according to frames other than economic self-interest—such as generosity or helping others, helping community, or individual responsibility— changing the narrative on the reason to purchase health insurance.

A "helping others" frame trades on individual tendencies to be generous or altruistic (Epstein, 2020, note 28).[7] It tells consumers that buying health insurance is charitable, making it so that those who are sicker can also afford coverage. Millennials in particular have demonstrated strong altruistic tendencies (U.S. Chamber of Commerce Foundation, 2012).

Relatedly, the "halo effect" is a type of cognitive bias that causes people to associate good with good—for instance, people notice a positive act of corporate social responsibility such as recycling coffee cups or providing shoes to poor children, and in turn, view the goods that a company sells to be of high quality. For this reason, products tying their sales to social movements and to themes of generosity have been particularly successful in recent years. Also known as a "noble edge" effect, people are more inclined to buy a company's products if that company is viewed as having engaged in genuine acts of generosity such as engaging in charitable enterprises or ethically sourcing its products (Chernev & Blair, 2015).

Marketers use a similar "green halo" effect, leveraging environmental concerns (Sexton & Sexton, 2014). A form of generosity-framing, individuals use their purchasing power for the good of society, even if it means higher individual cost (Schwartz et al., 2020; Vlaeminck et al., 2014).[8] Such framing interventions need not preclude other interventions, such as subsidies. If you were a carmaker that wanted to sell more cars, it would be worthwhile to lower the price. But it would also be worthwhile to do a better job marketing the product, showing that it is environmentally friendly, for example.

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[6] See Part II supra.

[7] Summarizing evidence

[8] Finding "that the green identity labeling technique increases purchase of environmentally friendly products across the consumer settings examined in [authors'] experiments"; Finding label that clearly advertised eco-friendly product led to increase in consumption.

Whether such message framing reforms would in fact increase insurance enrollment, and if so for what populations, remains an open empirical question.

Another possibility is to sell health insurance as a way to "help community." Rather than helping others or engaging in charity, the concept of helping community views a consumer as being a part of a collective—helping "us" rather than helping others. Community orientation—as contrasted with individualistic motivations—is often associated with cultural norms.

Research has shown that community orientation is stronger in the Hispanic culture than among Anglos. A Kovar and Aff study found that "76 percent of Hispanics are more likely to buy from companies that support the Hispanic community and Hispanic causes." (as cited in Singh et al., 2008). [9] Studies have also shown that Hispanics are more likely to be collectivists, prioritizing the needs of their family and community over individual needs (Singh et al., 2008; Gans, 2020). Hispanics who are collectivists are more likely to respond positively to "the group benefits of a product[.]" (Sawicki & Chapa, 2018). However, some work has shown a negative correlation between acculturation and collectivism (Sawicki & Chapa, 2018).

One last possibility is to frame the choice to buy health insurance as one of "responsibility." In other words, each individual must get covered to avoid others having to pay for them or take care of them if they get sick.[10] The notion of responsibility is a dominant frame in conservative political discourse, rooted in principles of self-reliance and accountability (Wiley, 2013; p. 153). Where conservatives may view public health regulation as restricting freedom,[11] the concept of responsibility focuses on individual choice. Responsibility has seen a resurgence in recent years, coming to underpin the response to the covid pandemic. It impresses upon people that they must individually take actions to mitigate the collective risk (Ahmed & Jackson, 2021; p. 48).

There is some evidence that the concept of responsibility can motivate desirable health actions (Minkler, 1999; Chan, 2019).[12] At the same time, the responsibility frame has come under fire from many who point out that the individual focus ignores systemic and structural determinants of health and fails to protect vulnerable populations (Hook & Markus, 2020; Jordan et al., 2020).[13] Emphasis on personal responsibility has also been associated with "blaming and shaming" approaches to health behaviors, especially for stigmatized conditions, such as obesity (Wiley, 2013). More generally, negative messages may generate negative emotional responses, which undermine the self-efficacy necessary for

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[9] Nitish Singh et al., U.S. Hispanic Consumer E-Commerce Preferences: Expectations and Attitudes Toward Web Content, 9 J. Elec. Com. Res. 162 (2008), available at https://www.researchgate.net/publication/265108951_HISPANIC_CONSUMER_E-COMMERCE_PREFERENCES_EXPECTATIONS_AND_ATTITUDES_TOWARD_WEB_CONTENT (citing Kovar and Aff 2005); see also Roger Gans, Missing the Mark in Marketing Healthcare Services to Emergent Populations: Why We Go Wrong and How We Might Do Better, 14 Int'l J. Healthcare Mgmt. 1429 (2021), available at https://www.researchgate.net/publication/341361951_Missing_the_mark_in_marketing_healthcare_services_to_emergent_populations_Why_we_go_wrong_and_how_we_might_do_better.

[10] Here, personal responsibility references the decision to purchase insurance rather than a responsibility to engage in health-promoting behaviors such as exercise or healthy eating.

[11] See, e.g., debates about public health measures to stem smoking and address obesity.

[12] Summarizing studies

[13] Note that an interesting new study on the framing of covid mitigation behaviors found that an approach that combined messages of self-interest and prosocial framing may have been more effective than either isolated approach.

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behavioral change (Derricks & Earl, 2019). Responsibility messages therefore need to be carefully crafted to avoid the "backfiring effects" of messaging seen as blaming consumers for their behaviors (Birau & Faure, 2018).

III.   Measurement of Status Quo Advertising Practices

A.   Methods

To frame our empirical project and assess its novelty, we sought to understand the frequency of various online advertising messages used in the field. State health care exchanges advertise in order to drive enrollment, particularly during the open enrollment and special enrollment periods each year. Healthcare.gov handles marketing for the states that do not run their own exchanges and instead rely on the federal exchange. We collected display advertisements cataloged by Oracle Moat, "a measurement and marketing analytics suite designed to help advertisers, publishers, and platforms measure media performance across the breadth of their digital and TV advertising campaigns." (Oracle, n.d.). Inclusion criteria for these advertisements were whether they ran within five years prior to our download date, and were tagged as pertaining to "health insurance." These criteria produced a total of 4,974 advertisements, from 17 state health exchanges plus the Federal exchange, healthcare.gov.

We trained two research assistants (RAs) by reviewing our experimental advertisements. The RAs were blinded to our research hypotheses. We asked each RA to independently code a random sample of 500 (10%) of the downloaded ads, indicating if the ad related to economic rationality (emphasizing affordability and coverage), helping others, serving community, or individual responsibility. We also coded whether ads reflected none of these themes, but instead carried some other message. Each code was binary as to whether the theme was or was not present for a given ad.

Five ads were excluded because of coding errors (i.e., the two research assistants did not provide matching identifiers for the ad), yielding 495 cases for analysis. Of these, we found substantial levels of interrater reliability, with 93% agreement on whether economic theme was present, with 95% agreement for helping others, 100% agreement for serving community, and 98% agreement for individual responsibility. Overall, 95% of the codes entered were in agreement. Given the large sample size and high level of agreement, we did not attempt to reconcile codes that disagreed. Instead, we simply excluded the 63 cases where the two raters did not agree on all four key theme codes, yielding N=432.[14]

B.   Results

Of the cases where raters agreed, we found that, in 54% (CI: ±5%) of the advertisements, none of the four themes were present, most commonly because the ad was merely informative about the existence of the open enrollment period or the deadline for signing up.

Focusing on the 199 ads in which any of the four themes appeared, 191 ads (96%, CI: 92-98%) played on the economic rationality theme. These included ads that stated "Protect your health and your

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[14] We also analyzed each RA's frequencies separately without excluding cases of disagreements, and the basic relationships are substantially the same (within a few percentage points on each metric) as described below for the agreement-screened sample.

wallet[;]" "Get connected to affordable health care. Find my plan[;]" "9 out of 10 who enrolled last year got financial help. Learn more[;]" and "Take the time. Take the savings."

We found no ads (0%) playing on helping others and only 1 ad (1%, CI:0-3%) playing on helping community, which read "Protect your family. Native Americans can sign up now for better health insurance." We did find 7 ads (3%, CI: 1-7%) that suggested a responsibility theme. For instance, one read: "You can't plan on staying healthy but you can have a plan."

In short, when the status quo ads from the field raised one of the four key themes, it was overwhelmingly the economic rationality theme, emphasizing affordability or coverage–twenty-times more often than the other themes tested. These data suggest that our proposed three additional themes are largely novel in the health insurance marketplace.

IV.   Online Vignette Experiment

A.   Methods

In a robust pilot experiment, we tested consumer interest in various insurance options and framing approaches. This project was determined to be exempt under the Human Subjects Protection Program at University of Arizona.

We aimed to enroll a sample of adults online, between the ages of 18 and 64, in a vignette-style, blinded, between-subjects, randomized experiment. A survey sample provider (Dynata) maintains a panel of online respondents and extracted a convenience sample, screened to include only those who responded to a screener question saying that they were uninsured.[15] We screened again on the Qualtrics platform to ensure that we would only include those respondents who twice said they were uninsured.

The full sample of 776 respondents spent 8.5 minutes on average on the survey platform. For our primary analyses, we screened to exclude respondents who spent less than two minutes on the survey as a whole (suggesting that they may not be paying attention). We also reviewed responses for junk data and excluded non-responsive or incomprehensible responses to our open-ended questions, reaching a reduced sample of 551 responses. (We also analyzed a sample not screened for speeding with similar results.) This subsample spent 9.8 minutes on task, on average.

Respondents were randomly assigned to either the control vignette or one of four experimental conditions. For the analyses and discussion herein, we exclude respondents assigned to two of the experimental conditions (tested in between-subjects design with blinding), which are beyond the scope of this paper.[16] The final sample for analysis then is N=344.[17]

As shown in Table 1, the sample skewed towards men, but broadly covered various ages, races, and

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[15] Dynata (formerly Research Now and Survey Sampling International) is a global online market research firm based in Plano, Texas, and Shelton, Connecticut. See www.dynata.com.

[16] The two other conditions we tested, which we do not report here, were a return-of-premium style plan and a long-term insurance plan. These are part of a larger research agenda relating to private-law solutions to health insurance, but which do not involve moral framing, and are thus beyond the scope of this paper. (Epstein 2020).

[17] Assuming a 3-group comparison, two-sided test, control group mean of 0.415, power of 80%, and alpha of 0.05, the minimal detectable effect size would be 0.184 (if Bonferroni correction were to be used, the minimal detectable effect would be 0.197 with alpha of 0.03), suggesting that the pilot study was underpowered.

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incomes.   Across all conditions, 43.6% said they would be slightly, moderately, or extremely likely to purchase the health insurance plan offered, and we use this dichotomized measure for our analyses.

The full survey is available on the Open Science Framework.[18] We asked participants to consider an offer to purchase an insurance plan, which we described in detail, with tables showing the types of services covered, and cost exposure profiles. To build this stimulus, we reviewed sample Exchange plans offered in various jurisdictions to approximate common features of available plans—a $2,000 deductible/year, 20% co-insurance, $30 copays, and drug costs between $10/month and $50/month, depending on the drug. We also told participants to assume things like preventive care and other essential health benefits were covered and that their doctors were in-network.

We also included a premium roughly adjusted for age and income subsidies under the ACA, using survey programming based on respondents' actual demographics.[19] For example, in the base case, a respondent age 30 earning over $60,000 in income was presented with a $300 monthly premium, but someone at the same age who earned $25,000 in income (400% of the federal poverty level) would receive a tax credit making the net cost of insurance only about $150 per month.

Participants received one of the following manipulations to the vignette they read: the base case/control, a standard plan with generosity framing as to the reason to enroll, and a condition in which the respondent received an additional subsidy of $500 per year. Notably, the $500 subsidy manipulation would have a bigger proportional, marginal effect for respondents who were already facing lower premiums due to young age or low income. We chose this flat change for simplicity and ease of interpretation.

Notably, there are a variety of ways in which the generosity frame could be conveyed, including some focusing on responsibility and others focusing on social norms. We used a simple "buy one give one" construct (Donnelly, 2016). Specifically, "for every healthy person who purchases a policy, the insurer will offer a health plan to an individual with a pre-existing condition like cancer or diabetes or epilepsy for the same price." We told participants that

> "the insurer will do this even though that sicker insured will cost the insurance company significantly more to cover. In other words, your act of buying a policy not only insures you against future risk, but it is also charitable—**_an act of generosity_**. By buying a policy, you would be funding health insurance coverage for a sicker person."

Respondents saw the image shown in Figure 1 below.[20]

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[18] https://accounts.osf.io/login?service=https://osf.io/ueph2/
[19] The Market Rules and Rate Review Final Rule, 45 CFR Part 147 (describing ACA rating rules, including age rating ratios of 3:1).
[20] This language oversimplifies how risk pools work for purposes of testing the basic generosity concept in this preliminary vignette study. We improve accuracy and hone the generosity language in subsequent phases of the experiment.

Figure 1
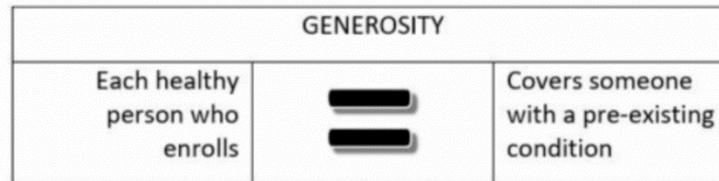
We specified a linear probability regression of willingness to buy the health plan. Our primary outcome variable was to ask each respondent how likely he or she was to purchase the plan according to the 7-point Likert scale (with 7 being "extremely likely"). We also asked respondents open-ended questions about why they were not insured and solicited free responses asking people to explain their decisions in the vignette.

B.   Results

As shown in Table 2, we found that, controlling for individual-level sociodemographic characteristics (gender, age, race/ethnicity, annual household income, and self-rated health status), the generosity framing group had a 11.8-percentage point higher probability of willingness to enroll in the described plan than the base type (significant at the .10 level).[21] Note that the generosity plan and the base case were economically identical to the individual. We tested simply increasing subsidies by $500—to the point where the cost of coverage would be only $8/month for some respondents. We did **not** find that those respondents were any more likely to purchase plans than our control group, and the sign of the coefficient suggests that the approach may even backfire (perhaps if people infer low value from low price).[22]

In underpowered exploratory analyses (not shown), conditional on the generosity framing, we saw gains among wealthier and healthier respondents in particular. These are precisely the groups that need to be brought into insurance pools to stabilize against adverse selection, and where rationality-based considerations may be less persuasive. Moreover, the largest changes were observed in the age 25-34 ("Millennials") subpopulation.

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[21] As a sensitivity check, we also present in the Appendix results from the whole sample (N=706) including those who spent less than two minutes on the survey and entered junk data - the results are qualitatively similar to our main findings that the generosity framing group had a marginally significantly higher (+9.7 percentage points) willingness to join than the base group (Appendix Table 3).

[22] In contrast, the real-world Exchanges have seen increased enrollment likely due, at least in part, to the new subsidies available under the American Rescue Plan Act.

Table 1. Pilot Experiment -- Summary statistics on the screened sample.

	Base group	Additional Subsidy	Generosity Framing
Willing to buy the insurance plan (extremely, moderately, or slightly likely)	0.415	0.378	0.522
Female	0.339	0.414	0.426
Age group			
18~24	0.102	0.072	0.087
25-34	0.212	0.189	0.252
35-44	0.203	0.171	0.183
45-54	0.237	0.288	0.174
55-64	0.246	0.279	0.304
Race/Ethnicity			
White (non-Hispanic)	0.686	0.712	0.722
Black (non-Hispanic)	0.161	0.099	0.157
Asian (non-Hispanic)	0.059	0.036	0.052
Hispanic	0.093	0.117	0.061
Other (non-Hispanic)	-	0.036	0.009
Annual household income			
$0~$25,000	0.373	0.360	0.435
$25,001~$40,000	0.280	0.306	0.252
$40,001~$60,000	0.195	0.189	0.148
$60,001~$100,000	0.102	0.090	0.130
More than $100,000	0.051	0.054	0.035
Self-rated good health (excellent/very good/good)	0.746	0.802	0.722
Observations (N)	118	111	115

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Table 2. Pilot Experiment - Linear probability regression of willingness to purchase health insurance.

	(1)	(2)
Assigned plan type (reference=base type)		
Additional subsidy	-0.037 (0.065)	-0.030 (0.064)
Generosity	0.106 (0.065)	0.118* (0.065)
Female		0.048 (0.049)
Age group (reference=18~24)		
25~34		-0.152* (0.080)
35~44		-0.258*** (0.083)
45~54		-0.175** (0.081)
55~64		-0.192** (0.082)
Race/Ethnicity (reference=White (non-Hispanic)		
Black (non-Hispanic)		0.074 (0.068)
Asian (non-Hispanic)		-0.006 (0.101)
Hispanic		0.140** (0.069)
Other (non-Hispanic)		-0.119 (0.139)
Annual household income (reference=less than $25,000)		
$25,001~$40,000		0.066 (0.053)
$40,001~$60,000		-0.094 (0.058)
$60,001~$100,000		-0.119* (0.071)
More than $100,000		-0.087 (0.096)
Constant	0.415*** (0.046)	0.516*** (0.096)
Observations		551
Outcome mean		0.436

N=551. Linear probability models were specified. In column (1), no sociodemographic variables were included. Column (2) shows results from the regression including observable individual-level characteristics. *, **, ***: significant at 0.1, 0.05, 0.01. Model also included dummy variables for two other experimental conditions, not shown here.

We asked survey participants (all of whom were uninsured) to select their reasons for "why [they were] not presently covered by health insurance." Although 58% of participants selected that they "[could] not afford premiums and still pay for other essential costs," 16% selected that they "would rather spend my money on other things" and 14% chose the option that they "[did] not think insurance [was] a good value given my health/risks." In other words, for 30% of survey respondents, insurance was affordable. Yet they were not convinced that incurring the cost made sense for them.

Even amongst uninsured respondents who selected "other" as their reason for not having coverage, traditional themes of invincibility were strong in their free response answers. For example, respondents said, "I don't need health insurance" and "I am still young enough and healthy enough to get away without having it." Other respondents explained that, "other than my over the counter vitamins, I spend nothing on MY health care for the past 3 years" and "after I lost my coverage eligibility (not due

to illness or sickness), I took very good care of myself and have since. So I have not been in a rush to find another provider."

After deciding whether they would purchase health insurance under the vignette conditions, we also asked people to explain their decisions. In the generosity condition, of course some declined, for example one explaining, "Just don't have the money and it's expensive and I cannot afford it." Nonetheless, several others embraced the generosity framing, for example explaining, "Not everyone who has a preexisting condition can afford full cost insurance. This sounds like a great way for them to get it." Another who expressed the intention to buy insurance in that condition explained, "The addition of helping someone with a condition swayed me."

V.   Focus Groups

A.   Methods

Recognizing that there are multiple possible ways to frame insurance around non-economic concerns, we sought to optimize our approach to generosity framing by engaging the experiences and perspectives of health insurance consumers (Bate & Robert, 2007). Focus groups "are a well-established technique in market research for the designing of new products." (Bruseberg & McDonagh-Philp, 2002; Kitzinger, 1995).

We recruited respondents from Maryland and Rhode Island, because these states were planned field partners for a future (Phase 4) experiment. We aimed to recruit a total of six groups with six uninsured participants each (n=36). This work was approved by the Institutional Review Board at DePaul University, and was pre-registered on the Open Science Framework (OSF).

We used a flyer that explained that researchers wanted to understand the perspectives of Marylanders and Rhode Islanders about health insurance and noted that we were specifically looking to talk to people who were uninsured. We offered participants a $75 gift card to participate in a 75-minute focus group session with researchers. Given the spread of the delta COVID variant, we conducted the focus groups by zoom.

We used various social media platforms (facebook, Instagram, twitter, reddit, craigslist) and posted to over 50 groups in Maryland or Rhode Island. We also called and emailed over 100 churches and other religious institutions in our target states and asked that they share our recruitment flyer.[23]

Potential participants were asked to fill out a pre-screening questionnaire that collected basic demographic data. We enrolled 32 participants in the focus groups across a broad range of ages, income levels, race, and ethnicity. We focused on attracting participants who would be eligible to purchase policies on the Exchange, although we did enroll a small number of low income participants who were likely eligible for Medicaid or fully-subsidized exchange-based plans. We limited participants to under 55 years of age so that they would be able to opine on the benefits of a long-term policy before hitting Medicare eligibility. We conducted two of the focus groups in Spanish.

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[23] We note that we were committed to running focus groups with Spanish speakers. We encountered difficulty in enrolling Spanish speakers, however, perhaps due to distrust. The use of churches to recruit participants helped legitimize the research to participants. We concede that it may have attracted participants who tended to have stronger altruistic or community-oriented tendencies.

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We used a standardized set of general statements and asked participants for their reactions to the statements (Table 3). Based on prior work in the field, we expected that our uninsured focus group participants would be concerned about the affordability of coverage (Satter & Brown, 2000). But we also anticipated that at least some participants would express willingness to purchase insurance if doing so benefited others (Tobi et al., 2019). We were particularly interested in probing whether general notions of altruism seemed more likely to motivate insurance purchase or if reference to community, or more narrowly, to a house of worship or friends and family would be more motivating.

We started by asking for general opinions on health insurance in the United States, on affordability, and on participants' interactions with the health insurance system (e.g. looking at prices or attempting to enroll.) Guiding the discussion, we also presented various framings of the health insurance purchasing decision sequentially, focusing on variations of generosity and altruism-themed messages, community-oriented messages, and responsibility-focused messages. We followed up to explore responses and the factors that influence agreement with or resistance to the various frames (Bruseberg & McDonagh-Philp, 2002; Kitzinger, 1995).

Table 3. Themes Tested in Focus Groups.

Themes
Generally, what are your thoughts about health insurance in the United States of America?
Should we think of healthcare more as a business transaction or as more of a fundamental human need?
Health insurance should be regulated or subsidized so its affordable for everyone.
Pre-existing conditions are medical problems that people have before they buy insurance. Do you think people with pre-existing conditions should be able to buy health insurance at the same rates as healthy people?
It is important for most people to get health insurance if they can.
Health insurance is affordable for me.
If I bought health insurance, I would eventually get enough value to make it worthwhile.
Health insurance would protect me from having big debts if I get sick or in an accident.
Health insurance would give me better access to healthcare.
Having health insurance could save my life.

People who are sick should be able to get affordable health insurance.
To make insurance affordable for sick people, healthy people need to buy it, too.
If we all buy health insurance, then it helps make it affordable for everybody in the community.
The health insurance system would work better if everybody was in it.
I'd be more likely to buy health insurance if it helped others in my community also afford coverage.
I'd be more likely to buy health insurance if it helped others in my church also afford coverage.
I'd be more likely to buy health insurance if it helped my friends and family also afford coverage.
I'd be more likely to buy health insurance if it helped others in my church also afford coverage.
Health insurance reflects our commitment to each other.
Health coverage is way to pool our promises to help each other when anyone needs it.
If we all buy health insurance, then we can keep people with pre-existing conditions covered.
A non-profit insurer says: "One for one: For each person that joins, we can cover another person with pre-existing conditions at the same cost."
If they can, people have a responsibility to purchase health insurance, so they do not put their risks on others.
If I don't get sick, my insurance company should refund some of my money at the end of the year.
It would make me more likely to buy a policy if the insurer issued refunds to people who stayed healthy.

We recorded, transcribed, and qualitatively summarized these focus group sessions to identify themes to guide the subsequent phases of the experiment. Respondents are de-identified and referred to using first names and a number indicating their session.

B. Analysis

We started by asking general questions about affordability. Most participants stated that health insurance is expensive and not affordable for them, although many participants confirmed that they had not actually checked prices in the last six months. Participants also reported that the process of obtaining health insurance and then of using health insurance was difficult to understand and navigate. Several participants reported that they were in good health and therefore did not need to purchase

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health insurance. Some in the Spanish language focus groups reported that they did not purchase health insurance because when they needed health care, they went home (e.g., to Mexico) where they could obtain care at a very low cost.

The participants were then presented with the concept: "to make insurance affordable for sick people, healthy people need to buy it too." This proposal garnered mostly positive responses from the participants. For example, Jeremy-1 pointed out that this is just "basic logic – if everyone buys it, it's cheaper for everyone."[24] Felipe-1 agreed, and thought this approach had the benefit of being "balanced." Jerry-2 also agreed with the statement, noting that "everyone is the same, from the sick to the poor, because God created everyone. If sick people have to buy it, healthy people [should too]." Susy-5 explained: "If I were helping someone else have insurance by getting my own insurance, I would, since I would be helping someone who wasn't able to pay for it."

While most agreed, some added some additional thoughts and caveats. For example, Barry-4, stated that "it should not be the responsibility of individual citizens to make healthcare affordable for the sick– that should be a responsibility for the government." Additionally, Tim-4, stated that while "more money in the pool does lower the cost for everyone, this isn't addressing the root of the problem." He stated "we need a better health insurance system in the first place - healthy people do not want to spend a lot of money, just to spend more if they get sick."

Next, the facilitators asked participants whether they would purchase health insurance if it benefitted those in their community. In general, most participants agreed that benefiting the community would make them more likely to purchase a policy. Rodrigo-4 (a Spanish-speaker) said "since this has to do with [building] a strong sense of community, and clearly minorities aren't as well protected as non-minorities, [this would reverse that inequality]. So, of course, the answer is yes." Monica-5 also agreed with the proposition of buying insurance to help your community, saying "I think it's important to make your contribution. Be a part of this change."

However, Kevin-4 stated that it is "his money, his life," and whether it helped others would not even factor into his decision. Additionally, Felipe-1 had an overarching affordability concern–he did not see the benefit of spending money to help others, asking "what if I need help?" His concern centered around his ability to pay for his own medical coverage.

When the facilitators narrowed the question to ask how they felt about buying health insurance to benefit the participants' church, or family and friends, the consensus among the participants was still that they *would* be more willing to purchase insurance if it helped these groups. In one session, this topic sparked conversation among participants. William-4 stated that whether it is framed as "community" or "friends and family" doesn't change his opinion. Additionally, William-4 stated that it should not matter whether someone was one of his family or friends to get the benefit–*everyone* should be able to afford it, whether they were close to him or not. Ryan-4 had the same attitude, saying he does not care whether it benefits someone in his close knit circle or wider community–helping others was what was important to him. In the other sessions, almost every participant agreed on this point: they were more likely to purchase insurance if it benefited others in their small community.

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[24] We have included quotes as illustrations of general themes that came up in the course of the focus groups. Our intention was to both capture trends and also to accurately capture the range of responses that we received in response to various themes.

Two related topics of conversation elicited mixed opinions from the participants. When asked if the health insurance system would work better if everyone was in it, some participants agreed, while others thought the system would crash. Rasheed-1 predicted that if the healthcare system included everyone in the nation, quality of care would go down, doctors' offices would be overrun, and the system would become backlogged. Felipe-1 agreed, stating that the healthcare system would be much less efficient if it included everyone in the country.

Additionally, the participants disagreed about what to do about those who have pre-existing conditions. Some thought that individuals with pre-existing conditions should pay *less* for healthcare than healthy people because they did not choose to be sick and their lives are already hard. Some drew a line between those who had no control over their condition, and those whose conditions are a product of their own poor lifestyle choices, who some thought should pay more for healthcare. Valerie-1 raised a counterpoint, saying that when we delineate along those lines, we ignore many factors that go into lifestyle choices, such as poverty. Finally, a third subset of participants conceded that in a perfect world, they would love for sick individuals to pay less, but that is simply not the way the market is set up. To illustrate this point, Rasheed-1 drew an analogy to car insurance, and pointed out that those with a bad driving record do not get the same rate as those with no accidents.

The facilitators also proposed the following statement: "If they can, people have a responsibility to purchase health insurance so they do not put others at risk." Reactions were polarized. One group of participants ardently disagreed, stating that purchasing health insurance should not be a responsibility – it should be a personal choice. Once it becomes a responsibility, the government forces it upon you, and these participants were uncomfortable with that concept. Additionally, Arron-4 stated that "this seems like a sales tactic," and reminded him of the common theme in today's world of "we're not in charge." He felt that this unnecessarily placed responsibility on the consumer. On the other end of the spectrum, a few participants reiterated the common theme of unpredictability – you never know what is going to happen tomorrow, so it is better to purchase insurance in order to be covered. Specifically, Simeon-4 said consumers should just "go for it" (i.e. purchase insurance) if they can afford it, because it helps them too.

The focus groups were very valuable in informing the subsequent field marketing experiment. The feedback helped the researchers to decide which messages to test and to hone the language used in advertisements. For instance, while the pilot experiment focused on general generosity language, the mostly positive reactions of focus group participants to the community-oriented framing convinced the researchers that a marketing theme centered around community and collectivism was worth testing as an ad group separate from one that emphasized generosity to others.

VI. Field Marketing Experiment

A. Methods

Building on the vignette experiment and the qualitative focus groups, we conducted a field experiment. (Bertrand et al., 2010; Gordon et al., 2019). We manipulated and observed actual

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consumer behaviors during the 2022 open-enrollment period,[25] allowing systematic manipulation of the alternative frames. This work was approved by the Institutional Review Board at DePaul University and was pre-registered on the Open Science Framework (OSF).

We contracted with a digital advertising agency (VONT) to purchase advertisements on the Google Display Network.[26] We screened for participants ages 18-64 (to exclude those likely already covered by Medicare), and excluded participants in Maryland and Rhode Island (planned sites of future field work). We also targeted respondents in the top 50% of the income distribution as estimated by Google, in order to avoid respondents who would likely be eligible for Medicaid or receiving very substantial Federal subsidies for health insurance coverage. Because eligibility for subsidies varies based on a very complicated formula of multiples over the Federal Poverty Level, while Google screening instead used a percentile-based approach, there was no feasible direct way to map these values. Instead, the top-50% threshold was used as a simplified inclusion criterion.

The outcome variable was Internet users' clicks on the advertisements, to "shop now" for health insurance on healthcare.gov. Although we could not observe actual insurance enrollment ("conversion"), clicks on the advertisements are a proximate consumer behavior that is a step towards getting enrolled.

As shown in Table 4, we tested four substantive ad groups: a control (consisting of messages currently used by health insurers and exchanges under the status quo), a helping-others frame, a community-based frame, and a responsibility frame. Each ad group was given the same budget over the same period of time. Within each ad group we wrote five headlines (of no more than 30 characters) and five descriptions (of no more than 90 characters).

This is a randomized experiment, where Google used their proprietary bandit algorithm to serve any of four different groups of advertisements in parallel. An individual's probability of being assigned to any ad group was statistically the same. As the experiment was running, Google mixed and matched headlines and descriptions within each theme. Their algorithm determined the optimal combination for each ad group based on performance history. Automated favoring of the highest performing combinations of headlines/descriptions gave each theme the best opportunity to perform in the long run. We do not observe clicks at the individual ad level (although Google provides information on which headlines and which descriptions performed the best); our hypothesis tests are at the ad-group level, comparing click-through rates (and thus cost-per-click, given each group's budget). The study is therefore randomized at the theme, or ad-group level.

For each of the four ad groups, we ran ads in Spanish and in English, meaning that in total, we ran eight ad groups. The Spanish translations were done by a native Spanish-speaking researcher. We then split our budget equally between the Spanish ads and the English ads. This over-weights Spanish ads relative to the percentage of the uninsured population that is Spanish speaking (about 9% nationally). We did this, however, to ensure power to detect effects within each language group. This allowed us to analyze the data as if it were two separate experiments. Each sample has validity for its own population.

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[25] To enroll for coverage for 2022, the healthcare.gov Open Enrollment period ran from November 1, 2021 - January 15, 2022 and was the same in most states.
[26] We used a digital marketing agency, https://www.vontweb.com/, to place the ads.

We anticipated that the advertisements would be rarely clicked upon—the industry standard is 0.33% to 0.5% of the time they are shown, though prior studies using similar methodologies have tripled that rate, for the most effective ads tested (Haenschen & Jennings, 2019). We designed and powered our study to parallel a prior study of advertisements to encourage organ donation, where researchers spent $12,550 to purchase 25,000 clicks, from over 5 million impressions, across a control and five experimental manipulations, yielding significant differences (Reese et al., 2020; Yom-Tov et al., 2018). We anticipated that our larger budget of $34,000 would allow us to purchase approximately 50,000 clicks on an estimated 15M advertising impressions, providing sufficient power for our planned comparisons (Faul et al., 2009).[27]

We hypothesized that our various frames may have different efficacy depending on demographic characteristics and on the cultural and political norms of respondents (e.g., red state respondents may be more attracted to the idea of responsibility than the idea of helping others). Google Ads provided us with aggregate counts of impressions and clicks grouped on the one hand by demographics (age, gender, parental status, and household income) and on the other hand by ZIP code. This data is imputed by Google and so is likely to be noisy. In particular, only about 62% (3,466,884 / 5,616,715) of our impressions were tagged with ZIP code data.

Our primary outcome on the efficacy of different messages utilizes *only* the impression and click through data. However, our exploratory analyses utilize several other data sources. In particular, we pulled ZIP code level aggregate data from the 2019 ACS 5-year estimates.[28] Since ZIP codes are not the same things as ZIP Code Tabulation Areas, we re-estimated these statistics utilizing the Department of Housing and Urban Development (HUD)'s ZIP code/Census tract crosswalk (Din & Wilson, 2020). In particular, for each ZIP code z and each Census tract t, HUD provides a "residential ratio" r_{tz} the proportion of addresses in t that have ZIP code z. These addresses are provided to HUD by the US Postal Service, and are the addresses they consider "active." For each count statistic s_z of ZIP code z of interest we then compute

$$s_z = \sum_t r_{zt} s_t$$

where s_t is the count statistic about tract t.

For political data, we utilize a similar method, but using HUD's ZIP code/county crosswalk. This is because 2020 presidential election data is only provided at the county level (MIT Election Data and Science Lab, 2018). Note that we excluded Alaska from this analysis as it does not report vote share by

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[27] Assuming a base rate of success of 0.33%, uniform assignment to one of four conditions (one control and three treatments), and an N of 15 million impressions, a one-way ANOVA will able to detect a difference between the arms of 0.000853 (i.e., 25.8% of the base rate) at 95% significance and 80% power This computation was computed with G*Power. Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*, 1149-1160. In fact, as shown below, our base rate turned out to be three times larger than expected in English and even higher in Spanish. While reducing our sample size, the higher incidence increased our power.

[28] U.S. Census Bureau. *2015-2019 American Community Survey 5-year Estimates* (2021). The data was retrieved from the Census Bureau's API. See the notebook entitled 030_Census_Data.ipynb in our accompanying code for details.

county (as it doesn't have counties) but instead by election district, and we have no good crosswalk between these and ZIP codes.

We estimated the intent-to-treat effects of random assignment to different advertising groups using a linear probability regression of an indicator whether an individual clicked the advertisement with robust standard errors. We presented coefficients on assigned advertising groups from both unadjusted models and adjusted models that controlled for gender, age groups, household income groups, and parental status. We used two-sided tests with a level of significance as 0.05 and analyzed the data using Stata, version 17 (StataCorp). Code for all these analyses may be found at GitHub at https://github.com/thepolicylab/HX-AdvertisementValences.

Table 4 – Advertising Assets, Stimulus (English Versions)

Theme	Self-oriented	Helping Others	Helping Community	Responsibility
Long Headline	No health insurance? You may qualify for a more affordable plan.	Buy health insurance. It means that someone who is sick can afford a plan, too.	Your community needs you. When everyone has health insurance, everyone benefits.	Don't make others have to cover your costs when you get sick. Get health insurance.
Headlines	More Affordable Than Ever (*Best*) Are You Uninsured? Get Covered (*Good*) Protect Yourself - Get Insured (*Good*) Affordable Health Insurance (*Good*) Get Health Coverage You Need (*Low*)	Be Generous, Get Covered (*Best*) Get Covered. Help Others (*Good*) Uninsured? Help Others (*Good*) Uninsured? Healthy? (*Good*) Uninsured? Protect Others (*Low*)	Get Insured and We All Benefit (*Best*) Uninsured? Join Together (*Good*) Communities Care. Get Insured. (*Good*) Build Community. Get Insured (*Good*) Stand Together. Get Insured. (*Low*)	Be Responsible. Get Covered (*Best*) It's Up To You To Be Insured (*Good*) Don't Be A Burden. Get Covered (*Good*) Don't Make Others Pay For You (*Good*) Don't Be A Burden. Get Insured (*Low*)
Descriptions	Giving you the peace of mind knowing that you and your family are covered. (*Best*) Find health insurance that fits your budget. (*Good*) No health insurance? You may qualify for a more affordable plan. (*Good*) As we combat the pandemic, you can get access to low- or no-cost coverage. (*Good*) Thanks to new subsidies, health insurance is more affordable than ever. (*Low*)	When you buy health insurance, you protect others who cannot protect themselves. (*Best*) Are you healthy? Your purchase of insurance funds a policy for someone who is sick (*Good*) Buy health insurance. You'll protect others who cannot protect themselves. (*Good*) As we combat the pandemic, buy a plan so that everyone can be protected.(*Good*) Buy health insurance. It means that someone who is sick can afford a plan, too. (*Low*)	As our community combats the pandemic, let's ensure everyone has access to coverage. (*Best*) An insured community is a protected community. Find a health insurance plan today. (*Good*) Buy a plan. An insured community is a protected community. (*Good*) Your community needs you. When everyone has health insurance, everyone benefits. Buying health insurance protects our community.	As you fight the pandemic, it's your responsibility to get health insurance coverage. (*Best*) Don't make others have to cover your costs when you get sick. Get health insurance. (*Good*) When you need healthcare, who do you expect to pay for it? Get covered. (*Good*) Do you expect other people to pay your medical bills? If not, then get covered. (*Good*) Don't burden everybody else when you get sick. Buy health insurance. (*Low*)

Note: In parenthesis are the ratings provided by Google for the performance of each headline and description within the ad group (best, good, low).

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B.   Results

As shown in Table 4, we presented 2,984,211 advertisements in English and 2,632,504 advertisements in Spanish. Given our sample size, even tiny differences between experimental conditions (such as a half percentage point difference in females versus males) can yield "significant" results, but observed covariates did not differ substantially between groups. Table 5 presents summary statistics based on ZIP code data, with somewhat smaller samples, given missing data as explained above.

Depending on the advertising group, in English the click-through rates ranged from 0.98 percent in the Self-Oriented ad group to 1.29 percent in the Responsibility group, a substantial increase of 31.6%. For Spanish users, click-through rates ranged from 1.20 percent in the Responsibility and Helping Others groups to 1.68 percent in the Helping Community group (Volovich, n.d.).[29] Figure 2 and Table 6 presents regression results using individual data with the additional regression controls, which do not change the basic story. In both language-groups the Self-Oriented advertisements underperform at least one other advertising theme. Table 7, presenting results from regressions using zip-level data, shows that coefficients on each experiment group are qualitatively similar to those taken from regressions using individual data (Table 6).

Appendix Figures A1 and A2 show subgroup analyses for individual covariates, including gender, age, income, and presence of children in the household.   Appendix Figures A3 and A4 show results using zip-level data from subgroup analyses, based on the share of Hispanics in the county, the political leanings of the county, and the share of uninsured in the county. Although strength of the association and statistical power varies, for all subgroups, regardless of ads language, "helping community" scheme showed significantly and meaningfully higher click-through rates than the control group. For English ads group, male, older people, or those with child(ren) have higher click-through rates than fellow participants if assigned to "helping community" scheme. For Spanish ads group, male, being older, higher income, or living without child was positively associated with click-through rates if assigned to "helping community" scheme.

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[29] Although these rates are low, they exceed the industry average click-through rate of 0.35% for Google display ads. In addition, the ads could not be targeted only to an uninsured population, and were thus only relevant to a small percentage of those served the ad.

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Table 5. Advertising Experiment -- Summary statistics based on individual data.

	Self-oriented	Helping community	Helping others	Responsibility
Panel A. English advertisement group (N=2,984,211)				
Click-through rate (%)	0.98	1.13	1.08	1.29
Female (%)	34.47	34.57	34.35	35.29
Age group (%)				
18~24	15.55	15.76	15.75	15.11
25~34	17.32	17.66	18.13	17.23
35~44	22.43	22.13	22.66	22.19
45~54	20.70	20.46	20.55	20.85
55~64	23.99	23.99	22.93	24.62
Having child(ren) (%)	39.09	38.98	39.67	39.32
Annual household income group (%)				
Top 10%	24.61	24.69	24.48	24.71
11–20%	18.25	18.21	18.17	18.32
21–30%	18.58	18.63	18.77	18.61
31–40%	20.62	20.68	20.75	20.64
41–50%	17.94	17.80	17.83	17.72
Observations	839,849	730,759	764,977	648,626
Panel B. Spanish advertisement group (N=2,632,504)				
Click-through rate (%)	1.34	1.68	1.20	1.20
Female (%)	30.65	31.79	31.81	30.80
Age group (%)				
18~24	13.56	14.20	13.20	13.95
25~34	14.67	15.44	14.42	14.54
35~44	25.33	26.04	25.46	26.79
45~54	25.61	24.87	25.75	25.37
55~64	20.83	19.45	21.16	19.34
Having child(ren) (%)	52.25	52.51	52.17	54.26
Annual household income group (%)				
Top 10%	18.47	18.82	18.33	17.71
11–20%	15.32	15.57	15.02	15.29
21–30%	18.81	18.96	18.77	19.11
31–40%	23.20	23.09	23.47	23.25
41–50%	24.20	23.55	24.41	24.63
Observations	653,507	527,308	725,024	726,665

Table 6. Advertising Experiment -- Summary statistics based on ZIP Data.

	Self-oriented	Helping community	Helping others	Responsibility
Panel A. English advertisement group (N=2,006,578)				
Click-through rate (%)	1.01	1.15	1.10	1.31
Share of Hispanic, ZIP-level (%)	16.32	16.01	15.95	15.87
Share of households with incomes below FPL, ZIP-level (%)	12.82	12.69	12.72	12.66
Share of high school graduates or lower educational attainment, ZIP-level (%)	11.38	11.23	11.25	11.18
Share of insured adults 19-64, ZIP–level (%)	88.14	88.26	88.26	88.31
Republican vote share, ZIP-level (%)	47.24	47.36	47.18	47.64
Observations	559,259	494,797	515,507	437,015
Panel B. Spanish advertisement group (N=1,460,306)				
Click-through rate (%)	1.38	1.72	1.26	1.23
Share of Hispanic, ZIP-level (%)	33.21	33.18	33.58	33.46
Share of households with incomes below FPL, ZIP-level (%)	14.18	14.18	14.20	14.31
Share of high school graduates or lower educational attainment, ZIP-level (%)	15.39	15.31	15.45	15.57
Share of insured adults 19-64, ZIP–level (%)	84.34	84.45	84.36	84.24
Republican vote share, ZIP-level (%)	42.88	42.77	42.54	42.85
Observations	365,058	290,186	406,941	398,121

Figure 2. Estimated Likelihood of Clicking to "Shop Now" for Health Insurance by Experimental Condition, with 95% Confidence Intervals
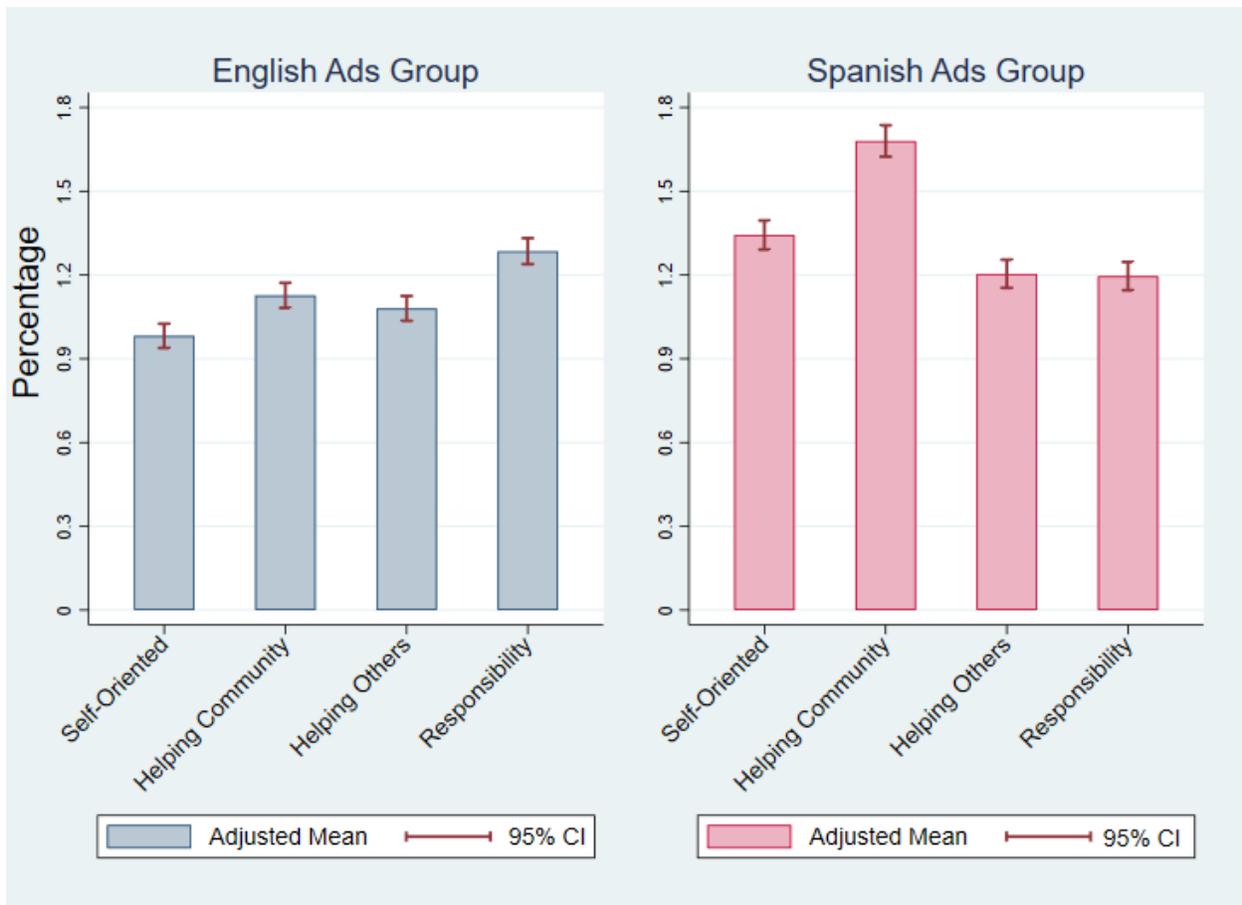
Note: This figure presents predicted click-through rates and 95% confidence intervals adjusted for the individual-level covariates (shown in Table 4).

Table 7. Regressions of click-through rate (%): Linear probability regression analysis with individual data.

	English ads group		Spanish ads group	
	(1)	(2)	(3)	(4)
Assigned group (reference=self-oriented)				
Helping community	0.141*** (0.020)	0.139*** (0.020)	0.337*** (0.031)	0.337*** (0.031)
Helping others	0.087*** (0.020)	0.086*** (0.020)	-0.119*** (0.026)	-0.118*** (0.026)
Personal responsibility	0.297*** (0.022)	0.295*** (0.022)	-0.153*** (0.026)	-0.152*** (0.026)
Share of Hispanic, ZIP-level tercile (reference=lowest)				
Middle tercile		0.0001 (0.021)		-0.005 (0.030)
Highest tercile		0.025 (0.029)		0.001 (0.040)
Share of households with incomes below FPL, ZIP-level tercile (reference=lowest)				
Middle tercile		-0.041* (0.022)		-0.015 (0.028)
Highest tercile		-0.066** (0.026)		-0.004 (0.034)
Share of high school graduates or lower educational attainment, ZIP-level tercile (reference=lowest)				
Middle tercile		0.068*** (0.022)		0.003 (0.030)
Highest tercile		0.035 (0.029)		0.085* (0.044)
Share of insured adults 19-64, ZIP–level tercile (reference=lowest)				
Middle tercile		-0.035 (0.023)		-0.042 (0.030)
Highest tercile		-0.044 (0.032)		-0.022 (0.042)

Republican vote share, ZIP-level tercile (reference=lowest)	(1)	(2)	(3)	(4)
Middle tercile		0.028 (0.020)		-0.007 (0.026)
Highest tercile		0.086*** (0.022)		0.028 (0.029)
Constant	0.906*** (0.058)	0.867*** (0.066)	1.388*** (0.123)	1.380*** (0.130)
Control group mean	1.011		1.380	
Observations	2,005,578		1,460,306	

We used a linear probability specification separately for each language advertisement group as follows: $Y_i = \beta_0 + \beta_1 AdsGroups_i + \beta_2 X_i + \varepsilon_i$ where Y is an indicator whether an individual i clicked a health insurance advertisement that was randomly assigned to her/him ("self-oriented", "helping community", "helping others", or "responsibility"), and X is a vector of ZIP-level sociodemographic factors shown in Table 1. Column (1) and (3) present regression coefficients adjusting only for state dummies, and column (2) and (4) reports full regression coefficients. We report robust standard errors in parentheses.
*, **, ***: significant at 0.1, 0.05, and 0.01.

Table 8. Regressions of click-through rate (%): Linear probability regression analysis with zip-level data.

	English ads group		Spanish ads group	
	(1)	(2)	(3)	(4)
Assigned group (reference=self-oriented)				
Helping community	0.141*** (0.020)	0.139*** (0.020)	0.337*** (0.031)	0.337*** (0.031)
Helping others	0.087*** (0.020)	0.086*** (0.020)	-0.119*** (0.026)	-0.118*** (0.026)
Personal responsibility	0.297*** (0.022)	0.295*** (0.022)	-0.153*** (0.026)	-0.152*** (0.026)
Share of Hispanic, ZIP-level tercile (reference=lowest)				
Middle tercile		0.0001 (0.021)		-0.005 (0.030)
Highest tercile		0.025 (0.029)		0.001 (0.040)
Share of households with incomes below FPL, ZIP-level tercile (reference=lowest)				
Middle tercile		-0.041* (0.022)		-0.015 (0.028)
Highest tercile		-0.066** (0.026)		-0.004 (0.034)
Share of high school graduates or lower educational attainment, ZIP-level tercile (reference=lowest)				
Middle tercile		0.068*** (0.022)		0.003 (0.030)
Highest tercile		0.035 (0.029)		0.085* (0.044)
Share of insured adults 19-64, ZIP–level tercile (reference=lowest)				
Middle tercile		-0.035 (0.023)		-0.042 (0.030)
Highest tercile		-0.044 (0.032)		-0.022 (0.042)

Republican vote share, ZIP-level tercile
(reference=lowest)

	(1)	(2)	(3)	(4)
Middle tercile		0.028		-0.007
		(0.020)		(0.026)
Highest tercile		0.086***		0.028
		(0.022)		(0.029)
Constant	0.906***	0.867***	1.388***	1.380***
	(0.058)	(0.066)	(0.123)	(0.130)
Control group mean	1.011		1.380	
Observations	2,005,578		1,460,306	

We used a linear probability specification separately for each language advertisement group as follows: $Y_i = \beta_0 + \beta_1 AdsGroups_i + \beta_2 X_i + \varepsilon_i$ where Y is an indicator whether an individual i clicked a health insurance advertisement that assigned to her/him ("self-oriented", "helping community", "helping others", or "responsibility"), and X is a vector of ZIP-level sociodemographic factors shown in Table 4. Column (1) and (3) present regression coefficients adjusting only for state dummies, and column (2) and (4) reports full regression coefficients. We report robust standard errors in parentheses. *, **, ***: significant at 0.1, 0.05, and 0.01.

VII. Discussion and Conclusions

Our measurement of status quo advertising practices confirms that the traditional approach to health insurance marketing is self-oriented, emphasizing affordability and coverage. Under this approach, and even with large subsidies and guaranteed benefits, uninsurance remains persistent in America. While cost of coverage is undoubtedly an important limitation, our review of the literature and our pilot study found respondents declining to purchase health insurance even when they could afford it. This may explain why over 3 million high-income Americans remain uninsured.

For some Americans, purchasing insurance is in fact a poor deal given the actuarial value and their private information about their own risk. For others, purchasing insurance may be a rational choice, but they may nonetheless decline due to biases, such as optimism. Moral messaging could potentially overcome barriers to purchase for many of them. Our focus groups confirmed that such themes could resonate for an important group of respondents.

Our online advertising experiment allowed us to observe actual consumer behavior—deciding whether to "shop now" for health insurance. We found substantial improvements in click-through rates by switching from the most common status quo message—Self-Oriented advertising themes about affordability and coverage—to advertising themes about moral aspects of health insurance. For English users, Responsibility, and to a lesser degree, Helping Community, were most effective. For Spanish users, Helping Community was the most effective, and the Self-Oriented ads were second-best. As Hispanic individuals account for 19 percent of the U.S. population but 29 percent of the uninsured, and up to 69 percent [of uninsureds], reside in households in which the adults have limited English proficiency[,]" these findings may be particularly impactful (Bosworth et al., 2021).

Health equity is negatively impacted by lower rates of coverage among people of color. To the extent that different framing could be used to improve uptake rates, it has the potential to improve health equity. Some of the people who would be enrolling in policies will be eligible for government subsidies, as well. One concern is that appeals to helping community meant to broaden the risk pool and drive premiums down also could result in fewer government resources being directed to these communities. But pooling community risk is the basis for a social solidarity system, and with subsidies tied to affordability, there is little risk of increased enrollment exacerbating inequities.

The particular political moment of this experiment, conducted almost two years into a pandemic, may be reflected in these results, particularly in the strong performance of the Responsibility theme among English speakers and Helping Community theme among Spanish speakers. Based on some research showing increased generosity during the pandemic, one might suppose that efficacy of these themes will decrease after the pandemic wanes (Fridman et al., 2022). In any case, it will be important to continue to assess performance of different messaging themes among different populations as political moments evolve. Applicability of these findings to potentially analogous areas where the social good requires action that may be against individual interest, such as vaccine uptake, should be tested.

It is also important to consider not just statistical significance but "clinical" or practical significance of the findings, especially for highly-powered studies like this one. Given that we allocated the same budget to each advertising group, click-through-rates and cost-per-click can be easily translated into clicks-per-$1000. For instance, $1,000 would buy 1,996.4 clicks for the English Responsibility group vs.

1961.2 clicks for the English Self-Oriented group (a difference of 35.2 clicks). We can further scale from $1,000 to a realistic advertising budget. In some recent years prior to Trump Administration cuts, the Federal government spent $100M to promote health insurance uptake, and the states and private insurers spend much more (Seervai, 2017). Assuming that $100M in online advertisements targeting higher income consumers based on the Self-Oriented theme were instead switched to the Responsibility theme, the improved strategy could cause an additional 3.52 million users to click.

These findings should encourage insurers motivated in a free market to increase enrollment, or Exchanges tasked with increasing enrollment, to take up this messaging. In terms of law and policy, if mere framing around prosocial values can prompt enrollment, then the need for a coverage mandate is less acute. On the other hand, however, the observed effect is not large enough to alone solve the problem of uninsurance and adverse selection. Beyond our use of moral framing in the consumer context, future experimentation should explore how prosocial values could be used to increase political support for universal coverage as well.

We emphasize the limitations of our work. While our randomized survey experiment relied on people who twice reported that they were in fact uninsured, and we adjusted the vignettes to reflect their ages and incomes, the ultimate purchasing decisions were hypothetical and statistical power was limited. Our focus groups provided rich data from real consumers, but cannot support causal inference, nor generalization beyond the particular populations studied in Rhode Island and Maryland. Our randomized field experiment observed actual consumer behaviors across advertising groups running in parallel with the same budgets at the same times. But Google's proprietary bandit algorithm assigned advertisements to users within each theme. Nonetheless, any user had the same statistical probably of being assigned to any of the four themes. We also limited our sample to higher-income Americans, and do not claim generalization to lower-income Americans who are likely uninsured for other reasons. Finally, we do not observe actual health insurance purchases, but only a predicate consumer behavior, the decision to "shop now" for health insurance, thus the true effects of moral messaging on insurance uptake can be smaller than what we observe.

Finally, we will note that as the first study of its kind, the particular implementations of the advertising themes may not yet be optimized. Although we learned from the pilot experiment and focus groups, and allowed Google to optimize which of our particular advertising messages were selected to maximize clicks, future work should explore additional versions of the responsibility and helping community themes in each language group. Accordingly, we may actually underestimate the ultimate value of using moral framing. On the other hand, our experiment, as the first of its kind, may benefit from the sheer novelty of these messages in the marketplace. Once implemented over months or years, respondents may become numb to these messages (or there may be a remaining subpopulation that is immune to them, once the receptive people become insured). Future work should also explore whether additional clicks translate to higher enrollment numbers and to what degree.

Notwithstanding the limitations, our research suggests that behaviorally-informed approaches to health insurance uptake may be helpful for Americans who can afford to purchase health insurance (with or without subsidies) but are nonetheless unresponsive to self-oriented messages emphasizing affordability and coverage. While far from a complete solution to uninsurance in America, emphasis on responsibility and helping community may be worthwhile.
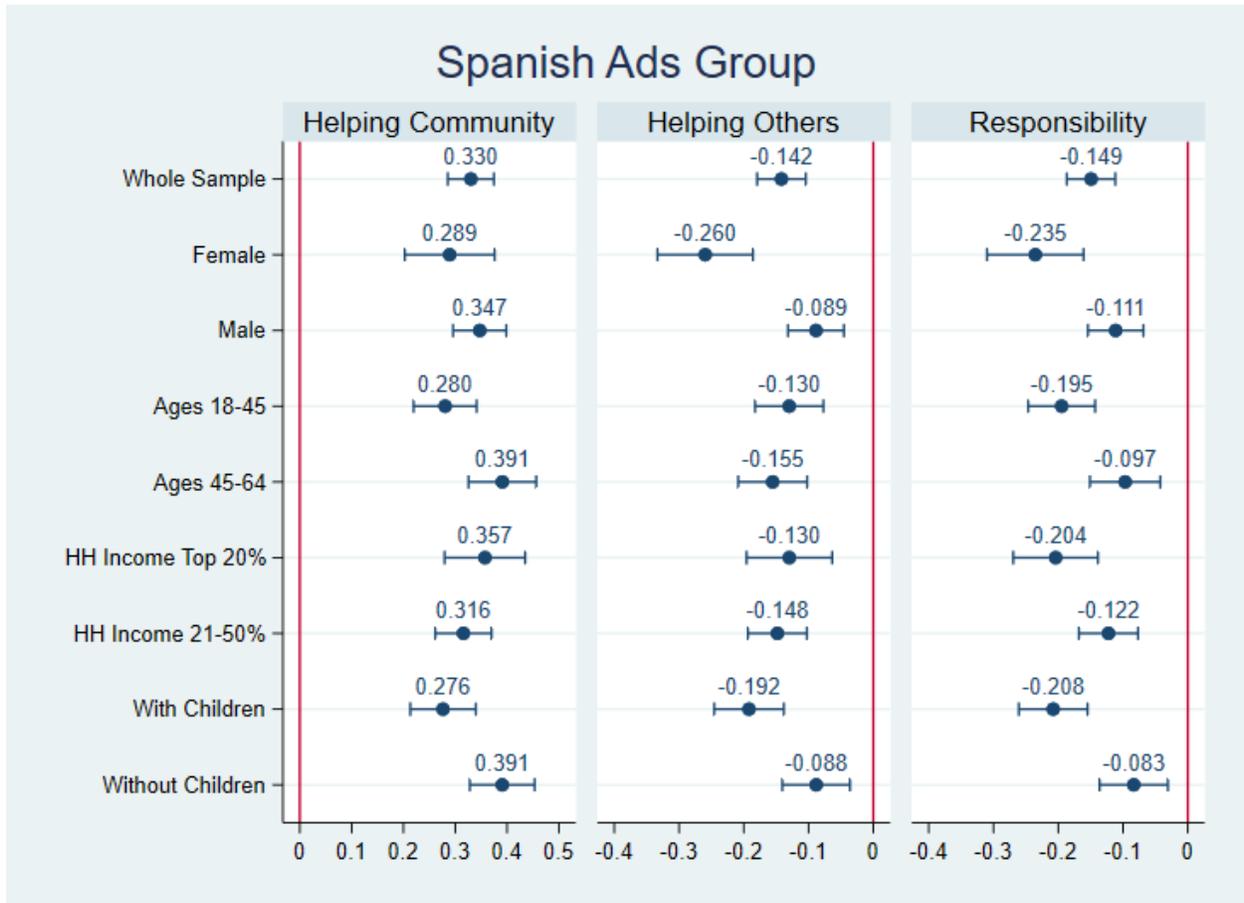
1. Appendix

Figure A1. Regression analysis coefficient plot on click-through rate with individual covariates, subset by experimental conditions, English ads subgroup, with 95% confidence intervals shown.
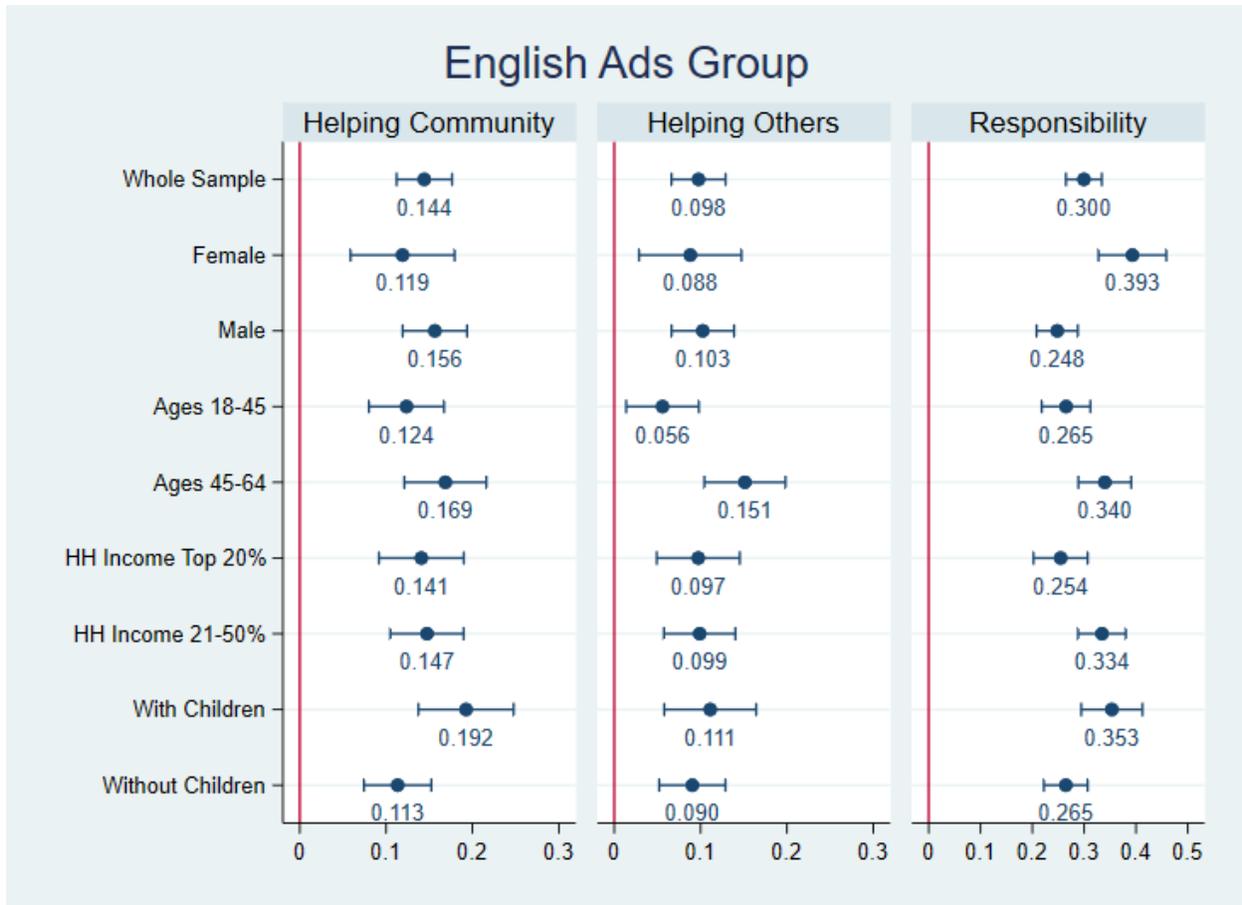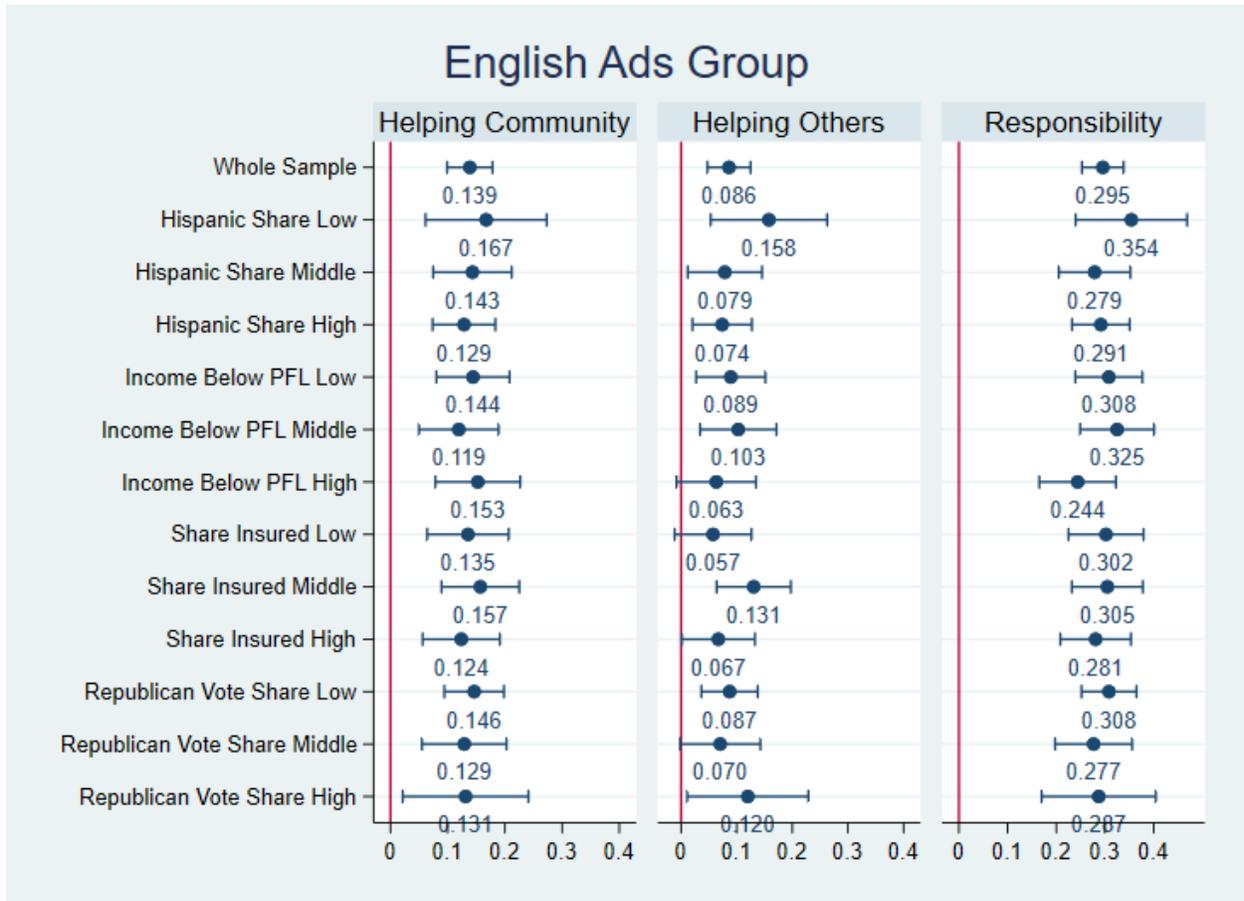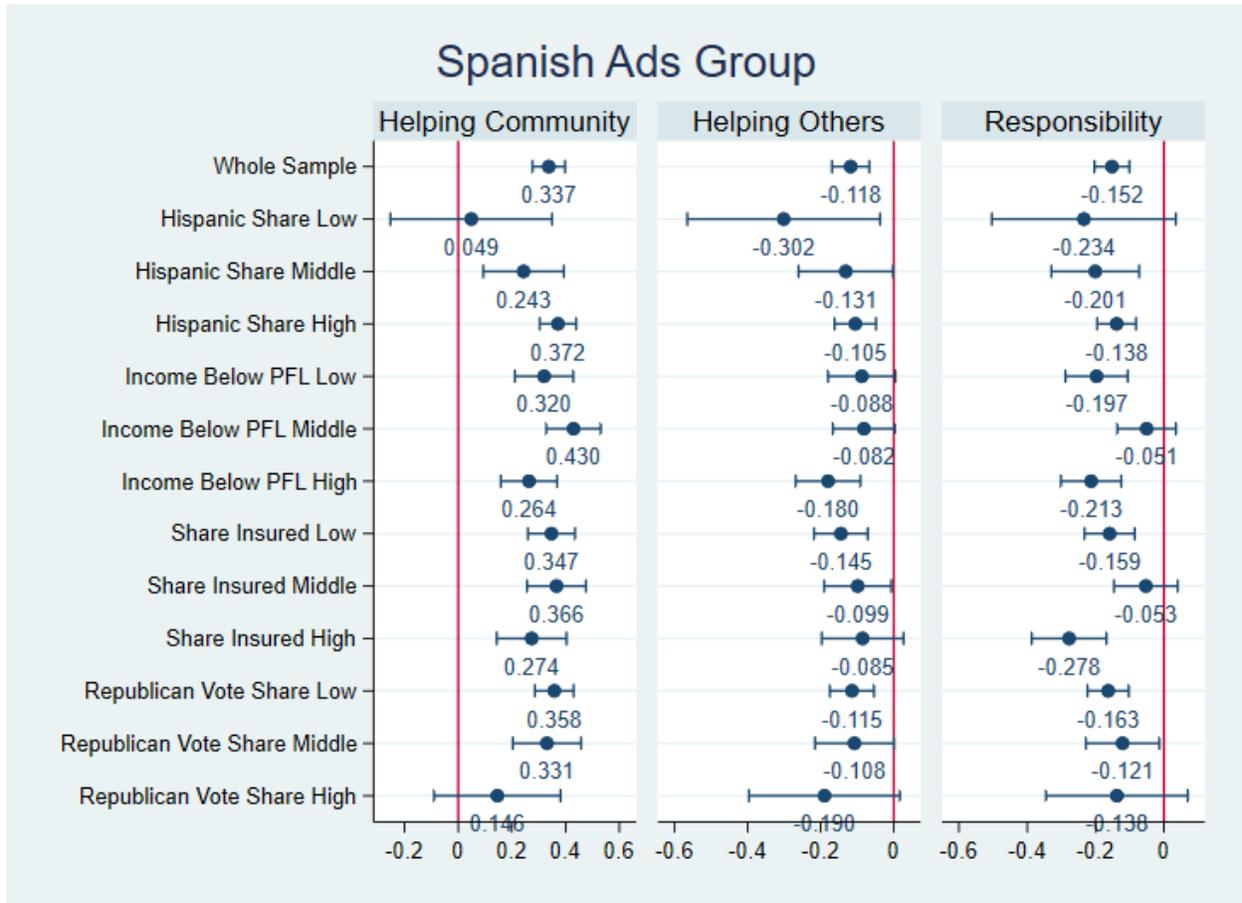

Control group (self-oriented) represented by red line. HH, household. Regressions include the same covariates as in Table 4.

Figure A2. Regression analysis coefficient plot on click-through rate with individual covariates, subset by experimental conditions, Spanish ads subgroup, with 95% confidence intervals shown.

Control group (self-oriented) represented by red line. HH, household. Regressions include the same covariates as in Table 4.

Figure A3. Regression analysis coefficient plot on click-through rate with ZIP-level covariates, subset by experimental conditions, English ads subgroup, with 95% confidence intervals shown.

Control group (self-oriented) represented by red line. Regressions include the same covariates as in Table 4.

Figure A4. Regression analysis coefficient plot on click-through rate with ZIP-level covariates, subset by experimental conditions, Spanish ads subgroup, with 95% confidence intervals shown.

Control group (self-oriented) represented by red line. Regressions include the same covariates as in Table 4.

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